

CLAIMS

We claim:

1. An implantable medical device comprising an amorphous metal alloy.
2. The medical device according to claim 1, wherein the device is permanently implanted.
3. The medical device according to claim 1, wherein the device is temporarily implanted.
4. An implantable surgical fastener comprising at least one amorphous metal alloy.
5. The implantable surgical fastener according to claim 4, wherein the surgical fastener is a monofilament suture comprising an amorphous metal alloy filament.
6. The implantable surgical fastener according to claim 5, wherein the monofilament suture comprises a coating.
7. The implantable surgical fastener according to claim 6, wherein the coating comprises a polymeric material.
8. The implantable surgical fastener according to claim 7, wherein the polymeric material is a resorbable polymer.
9. The implantable surgical fastener according to claim 6, wherein the coating comprises a healing promoter.
10. The implantable surgical fastener according to claim 4, wherein the surgical fastener is a multifilament suture comprising at least one amorphous metal alloy filament.

11. The implantable surgical fastener according to claim 10, wherein the multifilament suture comprises at least one polymeric filament.
12. The implantable surgical fastener according to claim 11, wherein the at least one polymeric filament comprises a resorbable polymer.
13. The implantable surgical fastener according to claim 10, wherein the at least one amorphous metal alloy filament is coated.
14. The implantable surgical fastener according to claim 13, wherein the coating comprises a resorbable polymer, a healing promoter, or both.
15. The implantable surgical fastener according to claim 4, wherein the implantable surgical fastener is a clamp, clip, sheath, or staple.
16. An implantable surgical fabric comprising at least one amorphous metal alloy.
17. The implantable surgical fabric of claim 16, wherein the surgical fabric is a non-woven fabric comprising a non-woven polymeric sheet and at least one amorphous metal alloy thread or wire that is bonded or laminated thereto.
18. The implantable surgical fabric of claim 16, wherein the surgical fabric is a woven fabric comprising at least one amorphous metal alloy thread.
19. The implantable surgical fabric according to claim 18, wherein the woven fabric comprises a plurality of polymeric threads interwoven with the at least one amorphous metal alloy thread.
20. The implantable surgical fabric according to claim 19, wherein the amorphous metal alloy threads comprise a coating.

21. The implantable surgical fabric according to claim 20, wherein the coating comprises a polymeric material.
22. The implantable surgical fabric according to claim 21, wherein the polymeric material is a resorbable polymer.
23. The implantable surgical fabric according to claim 20, wherein the coating comprises a healing promoter.
24. The implantable surgical fabric according to claim 18, wherein the surgical fabric comprises a plurality of woven amorphous metal threads.
25. The implantable surgical fabric according to claim 24, wherein the surgical fabric comprises a coating.
26. The implantable surgical fabric according to claim 25, wherein the surgical fabric comprises a coating that comprises a polymer or a healing promoter or both.
27. An artificial heart comprising an artificial heart valve, wherein the artificial heart valve comprises an amorphous metal alloy component.
28. The artificial heart according to claim 27, wherein the artificial heart valve comprises an amorphous metal alloy cage.
29. The artificial heart valve according to claim 27, wherein the amorphous metal alloy component is a sheath, flange, leaf or hinge.
30. The artificial heart valve according to claim 27, wherein the amorphous metal alloy component is a strut.

31. A stent comprising a substantially tubular member, wherein said member is a tube, sheath or coiled wire that comprises an amorphous metal alloy.
32. A bifurcated stent having a strut or wire comprising an amorphous metal alloy.
33. A stent-graft comprising:
 - a substantially tubular member comprising an amorphous metal alloy and
 - a graft material attached to the substantially tubular member.
34. The stent-graft according to claim 33, wherein the graft material comprises a surgical fabric comprising an amorphous metal alloy.
35. An orthopedic implant for reconstructive surgery, wherein said orthopedic implant is a wire, spring, or mesh, comprising an amorphous metal alloy.
36. An orthodontic wire or bracket comprising an amorphous metal alloy.
37. A medical device containing an amorphous metal alloy, wherein said amorphous metal alloy is formed by
 - heating an alloy in a reservoir to form a molten alloy;
 - forcing the molten alloy through an orifice by pressurizing the reservoir; and
 - impinging the molten alloy onto a chill substrate.
38. The medical device containing an amorphous metal alloy according to claim 37, wherein the amorphous metal alloy is formed by heating the alloy to a temperature 50 – 100 °C above its melting temperature.
39. The medical device containing an amorphous metal alloy according to claim 37, wherein the amorphous metal alloy is formed by pressurizing the reservoir to a pressure of about 0.5 – 2.0 psig in order to force the molten alloy through the orifice.

40. The medical device containing an amorphous metal alloy according to claim 37, wherein the amorphous metal alloy is formed by impinging the molten alloy onto a chill substrate, wherein the surface of the chill substrate moves past the orifice at a speed of between 300 – 1600 meters/minute and is located between 0.03 and 1 millimeter from the orifice.
41. A medical device containing an amorphous metal alloy, wherein said amorphous metal alloy is formed by
- heating an alloy in a reservoir to a temperature above the melting point of the alloy;
 - ejecting the molten alloy through an orifice in the reservoir to form a melt stream; and
 - impinging the melt stream onto a chill substrate.
42. The medical device containing an amorphous metal alloy according to claim 41, wherein the amorphous metal alloy is formed by ejecting the molten alloy through an orifice in the reservoir to form a melt stream with a velocity between 1-10 meters/second.
43. The medical device containing an amorphous metal alloy according to claim 41, wherein the amorphous metal alloy is formed by impinging the melt stream onto a chill substrate, wherein a surface of the chill substrate moves past the orifice at a speed of between 12 – 50 meters/second.
44. A medical device having a radiation shield comprising an amorphous metal alloy.
45. The medical device according to claim 44, wherein the radiation shield is adapted for external use.
46. The medical device according to claim 44, wherein the radiation shield is adapted for internal use.

47. The medical device according to claim 46, wherein the radiation shield houses an energy source.